

REMARKS

Claim 16 has been amended to cure an informality, and not in view of prior art rejections. Claims 1-25 are pending in the present application.

The Examiner rejected claims 1-7, 9, 10, 12-14, 16, 17, 19, 20, 22, and 23 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,926,544 (*Zhou*). Applicants respectfully traverse this rejection.

Claim 1 is directed to adjusting DC feed to a subscriber loop using a line card in which a common analog-to-digital converter is employed to convert voice-band signals and DC signals received from a subscriber line. In particular, claim 1 calls for receiving a signal comprising at least one of a voice component and DC component, receiving a signal from a subscriber line comprising at least one of a voice component and a DC component. Claim 1 further calls for converting the voice component of the signal to a digital voice signal using an analog-to-digital converter to allow further processing of the digital voice signal and converting the DC component of the signal to a digital signal using the analog-to-digital converter employed to convert the voice component of the signal. Claim 1 further calls for adjusting a DC feed to the subscriber line based on the digital signal.

Zhou discloses a direct current feed with a status change adaptation in a communication system. The Examiner asserts that *Zhou*, at col. 5, line 65- col. 6, line 60, teaches the features of claim 1. The Applicants disagree. *Zhou* at least does not teach using an A/D converter for converting the voice component of the signal to a digital voice signal and also for converting the DC component of the signal to a digital signal, where the digital signal is employed to adjust the

DC feed. The Examiner refers to Figures 3 and 5 in an attempt to sustain the rejection. Figures 3 and 5, which are a high-level representation of the described communication system, do not illustrate that an A/D converter that converts both the voice and DC component of the received signal. Figures 3 and 5 do include a converter 314, 506, respectively, but these components do not convert voice as well as DC components of the received signal, as shown in Figure 8 and described in col. 10, lines 3-33 of *Zhou*. Figure 8 illustrates a more detailed operational flow of the converters (e.g., quad converters 506) that are discussed in *Zhou*. As shown in Figure 8, the A/D converter 802 is employed for DC feed and for ring-trip detection (see element 810), but not for voice processing. Thus, for this reason alone, claim 1 and its dependent claims are allowable.

Claim 5 is directed to a method for DC feed control for a line card. The method comprises determining if the line card is operating in a current limit region of a DC feed curve; synthesizing a curve in the current limit region of the DC feed curve; determining a loop voltage based on the synthesized curve; and applying the loop voltage to the subscriber line.

The Examiner argues that *Zhou* anticipates claim 5 based on the description in *Zhou* at col. 5, lines 27-46 and at col. 5, line 65 through col. 6, line 60. The Applicants respectfully disagree, and maintain that *Zhou* at least does not teach synthesizing a curve in the current limit region of the DC feed curve and determining a loop voltage based on the synthesized curve. And, consequently, because *Zhou* does not teach determining a loop voltage based on the synthesized curve, it also does not, and cannot teach, applying the loop voltage (which is calculated based on the synthesized curve) to the subscriber line.

Figure 3 of the patent application shows a traditional DC feed curve employed by conventional line cards for DC feed control. The system described in *Zhou* also uses this type of DC feed curve, as shown in Figure 4 of *Zhou*. For reasons more fully described in the patent application, one or more embodiments of the present invention adjust DC feed to the subscriber line based on a curve synthesized (e.g., artificial curve) in the current limit region, as shown by line 405 in Figure 4 of the instant application. This "synthesized" curve is calculated, in one embodiment, using the method described in Figure 6 of the present application. As can be seen in Figure 4 of *Zhou*, there is no synthesization of a curve in the current limit region; instead, the curve defined 402 is used to define the upper limit of the loop during operation and curve 404 is used to define the lower limit.

The text relied upon by the Examiner, namely the text at col. 5, lines 27-46 and at col. 5, line 65 through col. 6, line 60, do not describe the features of claim 5 of the present invention. Rather, the cited text generally describes the graph of Figure 4, and the general operation of the device in Figure 3. Additionally, the cited text also does not teach or disclose determining a loop voltage based on the synthesized curve or applying the loop voltage (which is calculated based on the synthesized curve) to the subscriber line. Accordingly, for at least these reasons, independent claim 5, and its dependent claims, is allowable. Moreover, independent claims 9, 12, 20, and 23 also call for the "synthesization" feature that is completely missing from *Zhou*. As such, these claims, and the claims depending therefrom, are also allowable for at least this reason.

With respect to claim 16, *Zhou* fails to teach one or more of the claimed features. For example, *Zhou* at least does not teach a first path and a second path, wherein the first path

receives a digital signal and determines a cancellation current proportional to a current flowing from the subscriber line and the second path adjusts a DC level control based on the determined cancellation current. Accordingly, claim 16 and its dependent claims are allowable.

In view of reasons present above, the pending claims are allowable. As such, reconsideration of the present application is respectfully requested, and a Notice of Allowance is respectfully solicited.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Houston, Texas telephone number (713) 934-4069 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

Date: July 23, 2004

WILLIAMS, MORGAN & AMERSON, P.C.
CUSTOMER NO. 23720

By: 

Ruben S. Bains, Reg. No. 50,737
10333 Richmond, Suite 1100
Houston, Texas 77042
(713) 934-7000
(713) 934-7011 (facsimile)
ATTORNEY FOR APPLICANT(S)